

# **Statewide Threshold Analysis -Stationary Sources-**

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# Reporting thresholds

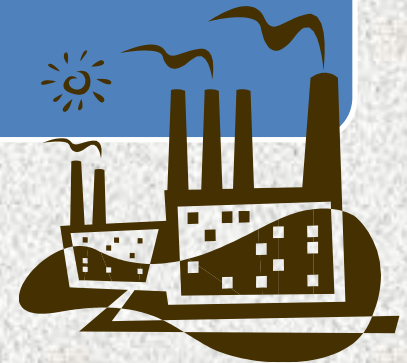
## On Road Mobile Sources

- 2500 MT CO<sub>2</sub>e



## Stationary Sources

- 10,000 MT CO<sub>2</sub>e



# Given the 10,000 MT Threshold,

Conduct a Statewide macroscale analysis to determine how many reporters and what activity may generate reporters meeting this threshold.

This presentation is an overview of:

- methodologies and
- preliminary findings

# Commercial Buildings

## Data Sources:

- Nationwide Commercial Buildings Energy Consumption Survey(CBECS)
  - Energy Information Administration, 2003
    - <http://www.eia.doe.gov/emeu/cbecs/contents.html>
  - Includes all buildings in which at least half of the floorspace is used for a purpose that is not residential, industrial or agriculture
  - A national sample survey that collects information on the stock of U.S. commercial buildings
    - Energy-related building characteristics
    - Energy consumption and expenditures

# Principal Commercial Building Activities

- Education
- Food Sales
- Food Services
- Health Care – inpatient/outpatient
- Lodging
- Retail (other than mall)
- Mall
- Office
- Public Assembly
- Public Order and Safety
- Religious Worship
- Service
- Warehouse and Storage
- Other
- Vacant



# Commercial Buildings National Sample Data

	a.  Natural Gas	b.  Fuel Oil	c.  District Heat	d.  total fuel consumption minus electricity  (trillion Btu)	e.  total number of buildings  (thousand)	f.  fuel consumption per building  (million Btu)	g.  CO2 MT emissions per building *
Activity	Table C1A	Table C1A	Table C1A	Table C1A	Table C1A		
education	268	47	134	449	386	1163.2	61.7
food sales	39	Q	N	39	226	172.6	9.2
food service (preparation)	203	Q	Q	203	297	683.5	36.3
Health Care Inpatient	204	9	Q	213	8	26625.0	1412.7
Health Care Outpatient	38	Q	Q	38	121	314.0	16.7
Lodging	215	35	Q	250	142	1760.6	93.4
Retail (Other Than Mall)	91	Q	Q	91	443	205.4	10.9
Malls	172	Q	Q	172	213	807.5	42.8

\* Only estimated values since Natural Gas EF (53.06 kg CO2 / MMBtu) used

# What does this tell us?

Findings similar to EIA analysis of Federal Senate Bill 280 (Climate Stewardship and Innovation Act) with an emissions coverage threshold of 10,000 MT (excluding electricity)

- Only 0.01 % of commercial buildings used enough fuel to trigger threshold
- Average for enclosed malls: 45 MT CO<sub>2</sub> emissions based on annual fuel oil and natural gas consumption
- [http://www.eia.doe.gov/oiaf/servicerpt/csia/pdf/sroiaf\(2007\)04.pdf](http://www.eia.doe.gov/oiaf/servicerpt/csia/pdf/sroiaf(2007)04.pdf)  
Energy Market and Economic Impacts of S. 280, the Climate Stewardship and Innovation Act of 2007 pg 43

# What about the Manufacturing Sector?

To conduct a macro analysis we looked at several data sources to ask,

- How many reporters?
- What NAICS or manufacturing activities might be captured by a 10,000 MT threshold?



# Preliminary Findings

Industry Code	Manufacturing Activity	# of Facilities	Industry Code	Manufacturing Activity	# of Facilities
311	Food Manufacturing	30	326	Plastics and Rubber Products	1
312	Beverage and Tobacco Mfg	4	327	NonMetallic Mineral Products	19
313	Textile Mills	1	331	Primary Metal	7
314	Textile Product Mills	0	332	Fabricated Metal Products	3
315	Apparel Mfg	0	333	Machinery Mfg	1
316	Leather and Allied Product Mfg	0	334	Computer and Electronic Product	18
321	Wood Product Mfg	26	335	Electrical Equip, Appliances	2
322	Paper Mfg	18	336	Transportation Mfg	23
323	Printing and Related Support	4	337	Furniture and Related Products	3
324	Petroleum and Coal Products Mfg	11	339	Miscellaneous Mfg	11
325	Chemical Mfg	8		<b>Estimated Total</b>	<b>190</b>

# Data Sources

- EIA's Nationwide manufacturing **energy consumption** survey (MECS), US Census Bureau Economic Census, Washington State, 2002- the PEW Center analysis for the WCI
- Duke University Nicholas Institute Study, 2007
- Washington State Labor Market and Economic Analysis database
- Air Quality Program WEDS database

# PEW Center Analysis for the WCI

## Washington State Data

- Industrial Stationary Combustion – Washington State
  - 2002 11.0 MMTCO<sub>2</sub>e
- EIA nationwide Manufacturing Energy Consumption Survey ( MECS), 2003 <http://www.eia.doe.gov/emeu/mecs/contents.html>
- NAICS code establishment distribution by employment size ( US Census Bureau Economic Census, Washington State, 2002) <http://www.census.gov/econ/census02/data/wa/WA000.HTM>
- Compute allocation factors for each NAICS code and employment size category

# Pew Center for the WCI

## Washington State sample data analysis

Industry Code	total1_4	total5_9	total10_19	total20_49	total50_99	total100_249	total250_499	total500_999	1000_ more	total_all	% Emissions by NAICS
311	0.012184	0.023570	0.041988	0.093143	0.207229	0.174357	0.272419	0.044591	0.000000	0.869482	9%
312	0.000995	0.000796	0.002469	0.003382	0.005110	0.005258	0.012429	0.000000	0.000000	0.030438	0%
313	0.000405	0.000561	0.000690	0.000901	0.000000	0.010433	0.000000	0.000000	0.000000	0.012989	0%
314	0.000124	0.000117	0.000131	0.000443	0.000461	0.000191	0.004180	0.000000	0.000000	0.005647	0%
315	0.000273	0.000363	0.000750	0.002397	0.000465	0.001732	0.000000	0.000000	0.000000	0.005980	0%
316	0.000051	0.000043	0.000135	0.000108	0.000000	0.000252	0.000000	0.000000	0.000000	0.000588	0%
321	0.000965	0.001268	0.002778	0.006256	0.040038	0.127400	0.009207	0.000000	0.000000	0.187913	2%
322	0.000103	0.000225	0.000688	0.002807	0.159131	0.169020	0.587577	0.218196	0.113259	1.251004	13%
323	0.001814	0.002783	0.004014	0.005367	0.004292	0.006159	0.002404	0.000000	0.000000	0.026834	0%
324	0.004681	0.001170	0.008525	0.019726	0.140121	1.506460	3.633215	0.000000	0.000000	5.313898	53%
% EMISSIONS by Size	0%%	1%	1%	2%	12%	27%	48%	6%	3%		

# GHG Emissions Distribution

Employment Size Category	Metric Tons	Establishment Count	Category Metric Tons
1000+ employees	279,573	11	25,416
500-999 employees	590,456	34	17,366
250-499 employees	4,776,614	89	53,670
100-249 employees	2,705,832	335	8,077
50-99 employees	1,189,754	447	2,662
20-49 employees	248,457	971	256
10-19 employees	112,173	1067	105
5-9 employees	56,415	1245	45
1-4 employees	39,502	3166	12

NB: Analysis based on fuel combustion not process emissions



# Nicholas Institute For Environmental Policy Solutions

“Size Thresholds for Greenhouse Gas Regulations: Who Would be Affected by a 10,000-ton CO2 Emissions Rule?” 2007

<http://www.nicholas.duke.edu/institute/10Kton.pdf>

- Nationwide study
- Provides an estimate of the threshold size (employees) for the various manufacturing NAICS codes that would trigger the 10,000 MT

# Nicholas Institute Study Sample Data

**Table 5: All available results for a 10,000-ton threshold**

NAICS Code	Industry	Total number of facilities	Annual CO <sub>2</sub> emissions (1000 tons)	Threshold size of firms reporting (employees)	Percentage of facilities reporting	Percentage emissions reported
311	Food	27,898	50,890	>250	5.2%	51%
311221	Wet corn milling	61	14,656	>50	54.1%	99%
[31131x]	"Sugar"	87	4,984	>50	58.6%	94%
311421	Fruit & vegetable canning	782	2,062	>250	7.9%	47%
312	Beverage and Tobacco	3,017	4,571	>500	1.6%	52%
[3121xx]	"Beverages"	2,903	3,336	>500	1.3%	51%
[3122xx]	"Tobacco"	114	1,235	>250	18.4%	87%
313	Textile Mills	3,919	6,590	>500	2.1%	38%
314	Textile Product Mills	7,270	1,759	>500	0.6%	38%
315	Apparel	13,041	913	none	0.0%	0%
316	Leather and Allied Products	1,530	212	none	0.0%	0%

# Workforce Explorer Washington

- Washington State Employment Security Department
- Search database for facilities in NAICS code 31-33
- Facility by employee size
- <http://www.workforceexplorer.com/aspdotnet/databrowsing/empMain.aspx>

# WEDS database

- AQP air emissions database
  - If fuel data reported, emissions are estimated

## Process Emissions

- Manufacturing facilities whose process generates ghg emissions
  - E.g. cement manufacturers

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